Kansas Department of Health and Environment

Bureau of Environmental Remediation/Remedial Section

State Water Plan Contamination Remediation Program

Salt Pile Reclaimed in Kanopolis

Background:
Two salt mines, the Royal and the Crystal Salt Mines, operated in the first half of the twentieth century near Kanopolis, in Ellsworth County. Both mines ceased operations shortly after World War II. The Royal Salt Mine, on the northeast edge of Kanopolis, ceased operations when its mine shaft collapsed. The shaft was subsequently filled in. Following closure of that mine, a large pile of granular salt remained on the surface for many years. Sometime in the 1970s or 1980s soil was pushed over the pile in an attempt to stop salt-saturated runoff and leachate from contaminating the area. In 1997, the KDHE North Central District Office received a complaint from an area farmer that salt water runoff from the pile was degrading the productivity of his agricultural land east of the pile. The site was assigned to the KDHE State Water Plan Contamination Remediation Program for investigation and potential cleanup. Investigation of area soil, surface water, and ground water indicated salt contamination was widespread in soil and ground water. In addition, the City of Kanopolis' public water supply wells were within a half mile of the salt pile. The State Water Plan program installed three monitoring wells to act as sentry wells between the contaminated area and the Kanopolis water supply wells.

Heavy salt contamination impacted the area.

The salt was crushed and screened.

Processed salt was hauled to KDOT storage facilities.

The former salt pile footprint was capped.

Solution:
In 1998, the State Water Plan completed a Corrective Action Study of the salt pile to evaluate the costs and feasibility of eliminating the pile as a contaminant source. Several remedial alternatives were evaluated including on site burial, hauling the waste salt to a landfill, capping the waste with either a compacted clay cap or a geocomposite liner, and reclaiming and reusing the material. The remedial strategy selected by KDHE was to reclaim and reuse the salt as road treatment salt. The Kansas Department of Transportation (KDOT) was contacted and agreed to accept the salt and provided a list of regional salt storage locations able to take the salt. During the remedial process, the existing soil cover was removed, the salt was broken up with a track-mounted hydraulic hammer, crushed, screened for size, treated with an anti-caking compound, and transported to the salt storage sites. In all, more than 3,000 tons of salt was removed from the site and transported to KDOT storage locations. The remainder of the unusable material was replaced in the footprint of the former salt pile and capped with an impervious clay cap. The site was regraded and the property owner agreed to revegetate the area. It is estimated that by reclaiming and reusing the waste salt, the State of Kansas saved nearly $30,000 in road treatment material.

Benefits:

- **3,000 tons of waste reused**
- **5 acres of land revegetated for reuse**

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